CBM MATE NODE 1 ZENITH

OBJECTIVE:
Mate Z1 Truss to Node1 Zenith port using Common Berthing Mechanism (CBM)

LOCATION:
NOD1/AFD EPCS

DURATION:
TBD

REFERENCED PROC(S):
None

WARNING

To prevent damage to Active CBM (ACBM), free drift thruster inhibit is required from initiation of CBM capture latch operation until *eight* bolts reach tensile load of 6672 N/1500 lbs. SRMS shall remain grappled to PMA-3 until such time.

1. VERIFY PRIMARY AND SECONDARYRPCs CLOSED

PCS Node 1:S&M:Zenith CBM
Node 1 Zenith CBM Display
'RPCM N13B B Primary Power'

√RPC Posn (four) - Cl

Node 1 Zenith CBM Display
'RPCM N14B B Secondary Power'

√RPC Posn (four) - Cl

2. VERIFY CBM STATUS

Node 1 Zenith CBM Display
'CBM Status'

√Mode - Activated
√Master - Secondary
√Comm Error - No X
√Master Cmd Status - Complete

NOTE
Step 3 is performed following SRMS translation of the PMA-3 into the CBM capture envelope.

3. VERIFY READY TO LATCH INDICATORS (RTLs) CLOSED

NOTE
Capture sequence may be initiated with three of four RTLs closed. In this case, the latch associated with the open RTL must be masked. The mask command for Latch X is accessed by selecting the Latch X button on the CBM depiction, selecting the Commands button from the pop-up window, and executing the Mask Latch X command.

Node 1 Zenith CBM Display
'Capture Latch Status'

√Posn (four) = 199---200

Node 1 Nadir CBM Display
'CBM Graphic'

√RTL (four) - green

4. PERFORM FIRST STAGE CAPTURE

Node 1 Zenith CBM Display
'Command Sets'

Sel Mate
Node 1 Zenith CBM Mate

Sel Capture First Stage
Node 1CBM Capture First Stage

cmd Capture First Stage Nominal
√Confirmation Request - Capture
cmd Confirmation Cmd (wait 15s)
√Master Cmd Status - Complete
√Cmd Code (four) - Capture
√Cmd Status (four) - Complete
√Posn (four) = *148---150*

5. PERFORM SECOND STAGE CAPTURE

Node 1 Zenith CBM Mate

Sel Capture Second Stage
Node 1CBM Capture Second Stage

cmd Capture Second Stage Nominal
√Confirmation Request - Capture
cmd Confirmation Cmd (wait 60s)
√Master Cmd Status - Complete

√Cmd Code (four) - Capture
√Cmd Status (four) - Complete
√Posn (four) = *6---8*

6. ACQUIRE FIRST SET OF FOUR BOLTS

Node 1 Zenith CBM Mate

Sel First Four
Node 1CBM Acquire First Four Bolts

cmd ABolts First Four
√Confirmation Request - ABolts
cmd Confirmation Cmd (wait 6 min)
√Master Cmd Status - Complete
√Cmd Code (four) - ABolts
√Cmd Status (four) - Complete
√Load (four) = *0---6700*

7. ACQUIRE SECOND SET OF FOUR BOLTS

Node 1 Zenith CBM Mate

Sel Second Four
Node 1CBM Acquire Second Four Bolts

cmd ABolts Second Four
√Confirmation Request - ABolts
cmd Confirmation Cmd (wait 6 min)
√Master Cmd Status - Complete
√Cmd Code (four) - ABolts
√Cmd Status (four) - Complete
√Load (four) = *0---6700*

8. ACQUIRE THIRD SET OF FOUR BOLTS

Node 1 Zenith CBM Mate

Sel Third Four
Node 1CBM Acquire Third Four Bolts

cmd ABolts Third Four
√Confirmation Request - ABolts
cmd Confirmation Cmd (wait 6 min)
√Master Cmd Status - Complete
√Cmd Code (four) - ABolts
√Cmd Status (four) - Complete
√Load (four) = *0---6700*

9. ACQUIRE FINAL SET OF FOUR BOLTS

Node 1 Zenith CBM Mate

Sel Last Four
Node 1CBM Acquire Last Four Bolts

cmd ABolts Last Four
√Confirmation Request - ABolts
cmd Confirmation Cmd (wait 6 min)
√Master Cmd Status - Complete
√Cmd Code (four) - ABolts
√Cmd Status (four) - Complete
√Load (four) = *0---6700*

10. PERFORM INTERMEDIATE TORQUING STAGE 1

Node 1 Zenith CBM Mate

Sel IBolt Stage 1
Node 1CBM IBolt Stage 1

cmd IBolt Stage 1
√Confirmation Request - IBolt
cmd Confirmation Cmd (wait 2 min)
√Master Cmd Status - Complete
√Cmd Code (sixteen) - IBolt
√Cmd Status (sixteen) - Complete
√Load (sixteen) = *0---11150*

11. PERFORM INTERMEDIATE TORQUING STAGE 2

Node 1 Zenith CBM Mate

Sel IBolt Stage 2
Node 1CBM IBolt Stage 2

cmd IBolt Stage 2
√Confirmation Request - IBolt
cmd Confirmation Cmd (wait 2 min)
√Master Cmd Status - Complete
√Cmd Code (sixteen) - IBolt
√Cmd Status (sixteen) - Complete
√Load (sixteen) = *0---15600*

12. PERFORM INTERMEDIATE TORQUING STAGE 3

Node 1 Zenith CBM Mate

Sel IBolt Stage 3
Node 1CBM IBolt Stage 3

cmd IBolt Stage 3
√Confirmation Request - IBolt
cmd Confirmation Cmd (wait 2 min)
√Master Cmd Status - Complete
√Cmd Code (sixteen) - IBolt
√ Cmd Status (sixteen) - Complete

√Load (sixteen) = *0---20050*

13. PERFORM INTERMEDIATE TORQUING STAGE 4

NOTE
Following Stage 4 of the intermediate torque sequence, all 16 bolts should have preload in the range of 23400-24500 N. Otherwise, step 13 should be repeated until all 16 bolts achieve the specified preload.

Node 1 Zenith CBM Mate

Sel IBolt Stage 4
Node 1CBM IBolt Stage 4

cmd IBolt Stage 4
√Confirmation Request - IBolt
cmd Confirmation Cmd (wait 2 min)
√Master Cmd Status - Complete
√Cmd Code (sixteen) - IBolt
√Cmd Status (sixteen) - Complete
√Load (sixteen) = *23400---24500* ELSE repeat step 13

14. PERFORM INTERMEDIATE TORQUING STAGE 5

NOTE
Following Stage 5 of the intermediate torque sequence, all 16 bolts should have preload in the range of 45650-46750 N. Otherwise, step 14 should be repeated until all 16 bolts achieve the specified preload.

Node 1 Zenith CBM Mate

Sel IBolt Stage 5
Node 1CBM IBolt Stage 5

cmd IBolt Stage 5
√Confirmation Request - IBolt
cmd Confirmation Cmd (wait 2 min)
√Master Cmd Status - Complete
√Cmd Code (sixteen) - IBolt
√Cmd Status (sixteen) - Complete
√Load (sixteen) = *45650---46750* ELSE repeat step 14

15. PERFORM FINAL TORQUING SEQUENCE

NOTE
Following the final torque sequence, all 16 bolts should have preload in the range of 84800-85900 N. Otherwise, step 15 should be repeated until all 16 bolts achieve the specified preload.

Node 1 Zenith CBM Mate

Sel Final Torque
Node 1CBM Final Torque

cmd FBolt Nominal
√Confirmation Request - FBolt
cmd Confirmation Cmd (wait 2 min)
√Master Cmd Status - Complete
√Cmd Code (sixteen) - FBolt
√Cmd Status (sixteen) - Complete
√Load (sixteen) = *84800---85900* ELSE repeat step 15

16. CLOSE CAPTURE LATCHES

Node 1 Zenith CBM Mate

Sel Close Latches
Node 1 CBM Close Capture Latches

cmd Close (wait 10 s)
√Master Cmd Status = Complete
√Cmd Code (four) = Close
√Cmd Status (four) - Complete
√Posn (four): 0---1

17. DEACTIVATE ZENITH CBM MASTER CONTROLLER

Node 1 Zenith CBM Mate

Sel Deactivate Zenith CBM
Node 1 Zenith CBM Deactivate CBM

cmd Deactivate
Mode = Deactivated
Master = None

18. OPEN PRIMARY RPCs

Node 1 Zenith CBM Mate

Sel RPC 11
RPCM N13B B RPC 11

cmd Open **Execute**
√Position - Open

Node 1 Zenith CBM Mate

Sel RPC 12
RPCM N13B B RPC 12

cmd Open **Execute**
√Position - Open

Node 1 Zenith CBM Mate

Sel RPC 13
RPCM N13B B RPC 13

cmd Open **Execute**
√Position - Open

Node 1 Zenith CBM Mate

Sel RPC 14
RPCM N13B B RPC 14

cmd Open **Execute**
√Position - Open

19. OPEN SECONDARY RPCs

Node 1 Zenith CBM Mate

Sel RPC 03
RPCM N14B B RPC 03

cmd Open **Execute**
√Position - Open

Node 1 Zenith CBM Mate

Sel RPC 04
RPCM N14B B RPC 04

cmd Open **Execute**
√Position - Open

Node 1 Zenith CBM Mate

Sel RPC 05
RPCM N14B B RPC 05

cmd Open **Execute**
√Position - Open

Node 1 Zenith CBM Mate

Sel RPC 06
RPCM N14B B RPC 06

cmd Open **Execute**
√Position - Open